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FREDERIC CHAPIN LANE, VENETIAN SHIPS AND SHIPBUILDERS OF THE RENAISSANCE, BORODINO BOOKS, 2018, 398 s.

In recent years, it has been seen that an increasing in the studies of the Republic of Venice. These studies focus on the economic and political relations of the Republic of Venice in the Adriatic, the Mediterranean and the Aegean. It is known that Venice intertwined with the sea has the maritime power from the period Pietro Orseolo II. However, how the Republic of Venice, which was recorded as "stato da mar", that is, "maritime state", created its naval power has always remained a question mark in minds. Frederic Chapin Lane's work "Venetian Ships and Shipbuilders at the Renaissance", the original of which was published in 1934, is an answer to the questions in mind. This crucial work which deal with the naval types of Venetian and the industrial of the naval construction activities in the 15th and the 16th centuries consists of foreword, twelve chapters, appendix and bibliography.

Frederic Lane deal with the naval types and features which Venice extremely used in the 15th and 16th centuries after a brief introduction on the type of galley and its history which constructed in the Arsenal of Venice in the first and second chapters. Before describing the ship types, the work highlight the necessity of building ships by taking into account their intented use, the route they will follow, the cargo they can carry and the precautions they can take against possible dangers (corsary attacks, epidemics, weather conditions, etc.). According to the writer it has been constructed the two ship types defined as long and round, were built in the Arsenal, the shipyard that brought Venice to the early industrial age. The long ships were generally were designed to be narrow and low equipped with oars. These ships which have to the fast maneuverability are designed for the wars and they could carry load between 140 and 250 tons. The round ships are large ships attached to sails. These ships which constructed for heavy loads were used in the commercial expeditions. The long and round ships were sometimes interchangeable or a ship designed for commercial purposes could be converted into a warship. The *tarettes* are example of the round and small ships.

Frederic Lane expresses the tarettes Venice used the wars between Venice and Genoa in 1264 and the importance of this war in terms of the discovering the features of *tarettes.* There were also the big ships such as *nef*, *roccaforte*, *cog* and *carack.* One of the big ships named roccaforte was given to the French king Louis IX to use in the expedition of Tunis from the Venetians in 1268. The technical features of long ships such as *fuste*, *galeotte*, *bregantini*, *fregare* and rowing ships such as *bireme* and *trireme* are explained, and until the middle of the 15th century, revolutionary regulations were made in large round ships and as a result of these regulations, round ships superior properties to other ship types in both

maritime and navy. The changes and improvements in ship types continued according to time and changing conditions.

There were anonymous heroes who had successes on maritime in Venice but every workers who work in the Arsenal apprentice too, were chained in the following years. The third part of the book is devoted to the famous shipyard workers whose names are recorded and the rivalries between them. Some crucial points are explained before giving the names in the book. The first of these is that a group of the navy carpenter known as *protis* designed the ships. *Protis* was a relatively educated group in the 16th century. However, their interests and experiences on the maritime was shaped in the shipyard as a master-apprentice relationship. The second important issue is that the best ship (galea) builders were the Greek masters in the first half of the 15th century. The Greek masters were expert craftsmen who were well versed in shipbuilding techniques. The Venetians benefited from these masters' technical informations and experiences. Some of these masters are Theodoro Baxon, Nicolo Palopano and his son Giorgio. Baxon's profession was the light ships and transformed more solid form to the warships without loss of lightness. Since Baxon was old and the possibilities of death before he teached the technical secrets that make their ships superior to others to the Venetian masters, the Senate was worried. But the Senate's concerns resolved before he died. After the death of Baxon, whose salary was higher than other masters because he was both knowledgeable and talented, Nicolo Palopano, who worked on shipbuilding in Rhodes was persuaded to replace his with a high salary.

There was always competition among the masters working in shipbuilding at the Arsenal. The government official supported to this competition too. There was always a great competition between Nicolo Palopano and Bernardo di Bernardo but Nicolo won to it. After the death of Nicolo, his son Giorgio was recorded as the last person to represent the Greek tradition. After that Giovanni Bressan (he constructed to the large commercial shipos), Leonardo Bressan (he worked as a a ship carpenter for many years) and Marco Francesco Rosso was recorded. There was also great competition between Leonardo Bressan and Francesco Rosso. Francesco Rosso was the most respected among the masters and built the best ships in 1497. But he died when he was crushed under a wall that fell on his as a result of the explosion in the Arsenal in 1508. Another name emphasized in the work was Vettor Fausto, who attracted attention among ship masters. Vettor Fausto had both social and analytical thinking skills. He designed the "quinquereme", a type of ship, and convinced the Senate that the ship was good enough to be used against pirates. He accompanied the fleet to Crete under the command of Gerolamo de Canal in the autumn of 1529 by building the quinquereme. However this expedition ended in a complete fiasco for the ship. Judging by the results, there was a high probability that there was something wrong or missing in Vettor Fausto's calculation. After that Senate decided to improve to this ship. Vettor Fausto's pupil Giovanni di Zaneto wrote a letter to Galileo Galilei who was a famous mathematician to find the flaw in his master's design. Finally, although the masters and the their innovations changed in time, there was the competition in Arsenal every time.

The author has given place important detail on the guild organizations which have different professions in Arsenal in the fourth chapter. The activities of the guilds in Venice were limited to fulfilling their religious and professional functions and providing social insurance to their members. It can be said the two types of guild in terms of their activities and the form of organization. One of these was the guild branches formed under the state or city administration, and the other was the unions of craftsmen who came together for the same purpose. The head of guilds was a person named *Gastaldo*, who was also

the representative of the Signoria. Gastaldo was responsible for fulling the obligations of the craftsmen to the state and for the implementation of the craftmen to the state and for the implementation of the regulations made or approved by the state authorities among the craftsmen. The guild members were provided with assistance in cases such as epidemics and accidents, through guilds. The meetings of guild were held twice a year. The reports prepared by the officials were taken and the appointments were made in the meetings. Also the new regulations were transferred to the masters. Besides the meetings, there were also the different activities between guilds. The religious activities especially were comprehensive. Because of this, most of the money which taken from the members of guild spend for the religious goods and the services.

After the ship types, the workers of the Arsenal and the guilds formed by professional groups, the process of the ships were dealt with in the fifth chapter. The foreman was responsible for selecting the timbers to be used in shipbuilding, which was the first step in building a ship. While timber was sometimes obtained from carpenter workshops, sometimes they would go the forest. Logs were cut according to ship size. Working with a long saw placed in the middle of a long frame, the craftsman would cut the logs according to the specified instructions. Then, logs were carried to the Arsenal and transformed proper form for the ship. The process of construction continued by fixing the body with support poles from both sides. After the skeleton of the boat was created, work was continued meticulously on its technical specifications. Technical information was valuable passed from father to son and this information was constantly recorded. The dimensions of the ship were determined based on previously determined measurements, and the width of the ship was accepted as the starting point based on the measurement taken. After the floor width was decided, the construction of the ship was started step by step. Additions to shipbuilding could be made using previous records. If any innovation was made and consistency in proportions was achieved, it was noted as new information, which was intended to be a reference for subsequent masters. The author used visuals in this section to help visualize the construction stages of the ship type.

Frederic Chapin Lane devotes the sixth and seventh chapters of his work entirely to the activities of private shipyards and the industrial organization of private shipyards. The private shipyard organization became operational to support shipbuilding by an individual or a group of capital owners. In particular, it was an attempt by Venice to support and accelerate shipbuilding, which had been slowed down and distrupted during war times. A private shipyard can be characterized as a separate sector where people with high financial means have a say in the shipbuilding stages and provide a certain amount of capital for shipbuilding. Capital owners could even have a say in the salaries of the workers who built the ship and in the control of the ship. In some periods, the private shipyards played a bigger role than Arsenal, especially in the construction of round ships. The author did not see any harm in stating that the decline in Venetian shipbuilding generally occurred during the war periods with the Ottoman Empire and that private enterprises increased in parallel. Because during the war, the Venetian State was experiencing. For this reason, shipbuilding had to continue by the wealty merchant class and nobles in return for a certain amount of capital. The ships were both a means of trade and defense for a maritime state. Therefore, the Republic of Venice had to keep at the highest level to trade, economy, defence and security. Although the Republic of Venice did not avoid taking any risks for shipbuilding, its policy towards this unstable industry varied according to circumstances. There were different dynamics such as protection of ship owners, prevention of competition with different craftsmen, purchase of ships by

foreigners, and shipbuilding outside Venice. Venice should not ignore these. There were records about the decrease of activities of these shipyards in the end of the16th century.

Frederic Lane deal with the improvement of the Arsenal in the eight chapter. According to the author the Arsenal was a place where using as ammunition and material warehouse before was known as a shipbuilding centre. The Arsenal covered eight acres from the 11th century to the 14th century. The Arsenal located around Castello expanded over time. The first example of expansion was found in 1303, when a factory for rope production began to be build. In the second half of the 15th century, the Arsenal reached to an enormous size. Shipbuilding was accelerated with the additions to the shipyards. Frederic Lane especially emphasizes the dates of the wars between Venice and the Ottoman Empire and claims that the shipyard of the Republic of Venice worked more efficiently during wartime. The Arsenal was directly governed by the three noblemen who were elected by the Maggior Consiglio and paid for their services. In addition to each of them having separate duties, they had to report every development in Arsenal.

The most important point that draws attention in the ninth chapter, where Arsenal management is tried to be explained as a whole, is that the shipyard is a systematic production complex. This production complex waas seen as the basis of Venice's power and even the heart of the state. Therefore, the Senate and the Consiglio di Dieci (Council of Ten) had a direct say in the shipyard management and determined the number of masters to be employed, their salaries, and the duties of those with less authority. The main authority who inspected whether the workers fulfilled their duties, punished the workers who disrupted their duties, and reported all this to state mechanisms such as the Senate and Council of Ten, in short, took full responsibility for the shipyard, was the *Patroni all'Arsenale*. There were many workers in the Arsenal other than Venetian officials. In the following lines of the chapter, the workers in the shipyard in the 16th century and the salaries they received are written one by one. In this chapter, the workers working in the Arsenal are mentioned after the officers in the Arsenal management. Members of all classes working in the Venetian shipyard were called *Arsenalotti.* In the shipyard, the production of oars, carpenters, ropes, foundries, ammunition, turners, galleys drawings, sails and flags were divided into workshops, and each workshop had ship carpenters, foundry masters, people responsible for technical works, oar masters, caulkers, saw masters and reel makers. They had ordinary employees who did not have technical knowledge and manual skills.

The previous section focused on the salaries and employment conditions of these professional groups. In this chapter, visible changes in professional groups according to some years have been tried to be conveyed. During the plague in Venice, there was a serious decrease in the number of workers in some occupational groups. As the craftsmen working in the Arsenal became increasingly different from other craftsmen, they began to be known not by their proffesional names but as the general term Arsenalotti. In addition to all their duties and responsibilities regarding the navy, Arsenal masters also had traditional political duties and privileges. They could be guards in the square when rumors of a conspiracy were heard, one of the rescue teams called in case of a dangerous fire, and also workers in the mint.

The author focused on the question of how the order between these parameters was maintained in the shipyard after detailing the Arsenal management. The Arsenal was more like a home for workers than a workshop. By Arsenal managers, craftsmen were seen not only as factory workers but also as people responsible for strengthening the state. For this reason, workers were ensured to work efficiently and some arrangements were made for this. Every worker had to be at work on time. Otherwise, salary

payments would be incomplete. Problems such as when the masters came to work and when they left, which master worked more efficiently, whether he left work during working hours and the time he was away from the workplace were recorded. There were officials who write this in the 16th century. Masters who did not do their job properly were punished by being from the salary lists for that week. Sometimes such punishments did not act as a deterrent and again in the same century, four officers were assigned to go around the Arsenal (one to wait at the entrance) to check whether the masters had abondoned their work.

The twelfth chapter of the book focuses on the demand and supply of timber, which is considered of the basic stages in ship production. Venetian ships were generally made of timber, oak, spruce, pine and fir trees. The regions around Venice, especially Istria and Dalmatia, located in the northwest of the Adriatic Sea, were very favorable areas in terms of forests. Oak species were used for the ship's ribs, bow and stern masts, beams and outer covering. Spruce and fir were mostly suitable for interior coverings and superstructures. The importance of the fir tree was due to its use in poles. Fir and spruce were sourced from the Rhaetian Alps, and oak logs from the forests surrounding the region of Mestre and lying on the edge of the lagoon. In the Arsenal, the transportation and processing of this timber and other tree species was equally important as the supply of timber from ship production stages. The transportation was one of the biggest problems for both the workers and the Venetian Senate. Because many streams and water channels passed through places where tree species were abundant. Bringing trees from these forests caused many difficulties, especially labor and cost. However in the following years, due to the unconsciousness of the merchants and the public, when trees were cut down haphazardly, out of necessity, and the number of trees in the forests decreased, Senate turned to the policy of protecting the forests, with the idea that there might be a need for warships, especially in wartime. It seemed that the policy of protect and renovation of the state to the forests reached to aim in the second half of the 16th century.

Finally, Frederic Lane's work discussed is based on rich archival materials, and as it is known, the use of archive in historiography increases the reliability of the work. This work, which was created using the documents under the titles Secreta, Relazione Collegio, Senate and Arsenale in the Venice State Archive (Archivio di Stato di Venezia), is also detailed using various period sources. The works contains very interesting and detailed informations about the Arsenal that constituted the naval power of the Republic of Venice considered as a whole. The functioning of the shipyard in the 15th and the16th centuries, types of ships, differences between ship types, innovations and developments in the shipbuilding, transfer of tips for shipbuilding, competition between craftsmen and the contributions of these competitions to the shipyard are meticulously discussed. In order to understand the naval power of Venice, one should look at this Arsenal and its functioning, which created wonders in those centuries based solely on human power. In addition, the author's use of visuals in his work so that types of ships can gain meaning in the readers' memories gives the work liveliness. A point that can be considered negative in the work is that the supply of timber, which is the first stage in ship construction, and the functionality of the shipyard are given in the last chapters, and it is thought that the integrity of meaning can be better achieved by giving some chapters under the same title.